UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

MEMORANDUM:

From: Kevin Sweeney, Senior Entomologist

Date: August 21, 2012

Subject: PRODUCT PERFORMANCE DATA EVALUATION RECORD

DP barcode: 400315
Decision no.: 461575
Submission no: 912237
Action code: R310
Product Name: HomeGuard GT Granular Termticide
EPA Reg. No or File Symbol: 279-GULR
Formulation Type: granular
Ingredients statement from the label with PC codes included: 0.1% bifenthrin (PC code: 128825)
Use pattern: Apply to masonry construction wall voids.
Application rates of product/active ingredient: Apply granules into the void to a deptb of at least 3 inches. A cubic foot of void contains 11.5 lbs of granules or 0.08 lbs per cubic inch; equivalent to 0.0115 lbs bifenthrin per cubic foot.

OCSPP Guideline: 810.3600 to the extent it is applicable.

I. Action Requested: New product citing data and relying on new data from Australia. Efficacy data were selectively cited and should be reviewed in support of the subject product.

II. Background:

III. Study Reviews:

44086701 Ballard, J. (1996) Bifenthrin 0.2 G Termiticide Efficacy: Lab Project Number: PDM-001-96. Unpublished study prepared by FMC Corp. 22 p.

44118601 Ballard, J. (1996) Bifenthrin 0.2 Field Termiticide Efficacy: Lab Project Number: PDM-003-96. Unpublished study prepared by FMC Corp. 52 p.

These studies showed that bifenthrin applied at 0.01 lbs or greater per 100 square feet killed termites. The pending granular product is applied at 100x the rate that was successful in this study.

MRID48751603 HomeGuard GT Granular Termticide, Product Performance Test Guidelines, Strucutural Treatment

Summary: Acceptable. The data shows that the product was effective in laboratory assays. The assays evaluated termite tunneling depth, repellency and mortality. The 0.1% granule was effective when applied at a depth of up to 1.6 inches. The label recommends a minimum application depth of 3 inches in masonry voids.

Entomologist's Recommendations:

1. The efficacy data satisfy the data requirements for a "kills termites" product. Remove any reference to "prevents" from the label. No data were provided to show that the product can keep termites out of structures.

2. Remove references to other named products. It is best to express the use of the product as one that may be used to kill termites in addition to or with products intended for pre-construction applications.

3. However, this product is not intended as sole protection against subterranean termites and the standard disclaimer should be added to the label. Retain the annual inspection interval on the label. This product alone is not a pre-construction or preventative application.

4. Remove references to "termite management systems". The Agency does not register these systems. Labeling should not market or promote these "systems". FMC should devise a marketing strategy for integrated use and sale of their products.

5. Remove the first sentence of the last paragraph under the header "Service Requirements" that discusses efficacy data results. Remove the claim of six years. There is no data to support this claim. This claim also appears on EPA Reg. No. 279-3448 and should be removed. We do not allow longevity claims for termiticides due to variable application and infestation conditions.

6. Add an application rate of 11.5 lbs of product per cubic foot.

7. Restrict the use of the product to exterior masonry cavities and voids only.

8. Based on the seven comments above, I suggest the registrant revise the label before EPA registers the product.

TASK 2 DATA EVALUATION RECORD

STUDY TYPE: Product Performance

MRID 4875160-3. Ballard, J.B. HomeGuard® GT Granular Termiticide, Product Performance Test Guidelines, Structural Treatment. September 23, 2011.

810.3500. Premises Treatments
810.3600. Structural Treatments

Product Name: Homeguard® GT Granular Termiticide
EPA Reg. No. or File Symbol: 279-GULR a[redacted]
Decision number: 461575 a[redacted]
DP number: 400315 [redacted]

Prepared for
Registration Division (7505)
Office of Pesticide Programs
U.S. Environmental Protection Agency
Washington, DC 20460

Prepared by
Summitec Corporation
Task Order No.: 2-64 and 2-67

Primary Reviewer:
Claudia Troxel, Ph.D.

Signature: Claudia M. Troxel
Date: AUG 0 2 2012

Secondary Reviewers:
Gene Burgess, Ph.D.

Signature: Gene Burgess, AE
Date: AUG 0 2 2012

Robert H. Ross, M.S. Program Manager

Signature: Robert H. Ross
Date: AUG 0 2 2012

Quality Assurance:
Angela M. Edmonds, B.S.

Signature: Angela M. Edmonds
Date: AUG 0 2 2012

Disclaimer

This review may have been altered subsequent to the contractors' signatures above.

DATA EVALUATION RECORD

[EPA Primary Reviewer's Name]

STUDY TYPE:	PRODUCT PERFORMANCE [810.3500 and 810.3600]
MRID:	487516-03. HomeGuard® GT Granular Termiticide, Product Performance Test Guidelines, Structural Treatment. Ballard, J.B. 2011.
DP BARCODE:	400315 and [redacted]
DECISION NO:	461575 and [redacted]
SUBMISSION NO:	912237 and [redacted]
SPONSOR:	FMC Australasia Pty Ltd., Unit 26, 8 Metroplex Ave, Murarrie Qld 4172, Australia
TESTING FACILITY:	Ballard Pest Management Consulting, LLC, 617 Stokes Rd., Suite 4-310, Medford, NJ 08055
STUDY DIRECTOR:	None assigned
SUBMITTER:	John F. Wright
STUDY COMPLETED:	23/9/2011
CONFIDENTIALITY CLAIMS:	None
GOOD LABORATORY PRACTICE:	"This study herein, 'HomeGuard® GT Granular Termiticide, Product Performance Test Guidelines, Structural Treatment', Project ID: 11-PRA-FMCA-007 was not conducted and reported in compliance with the requirements of the Good Laboratory Practice Standards set forth in Title 40, Part 160 of Code of Federal Regulations of the United States of America. No study director was assigned. The data used in this report were conducted in accordance with the recognized procedures for termite efficacy studies."
TEST MATERIAL: [As noted on label]	PRODUCT NAME: HomeGuard® Collars [redacted] EPA REGISTRATION NUMBER OR FILE SYMBOL: [redacted] ACTIVE INGREDIENT NAME: [redacted] CHEMICAL NAME: [redacted]

[redacted]

PRODUCT NAME: HomeGuard® GT Granular Termiticide
EPA REGISTRATION NUMBER OR FILE SYMBOL: 279-GULR
ACTIVE INGREDIENT NAME: Bifenthrin
CHEMICAL NAME: Cyclopropanecarboxylic acid, 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl-, (2-methyl(1,1'-biphenyl)-3-yl)methyl ester, (Z)-
A.I. %: 0.1
PC CODE: 128825
CAS NO.: 82657-04-3
FORMULATION TYPE: Granules
PRODUCT APPLICATION RATE(S) g/m^2: Not found
ACTIVE INGREDIENT APPLICATION RATE(S)g/m^2: Not found

PROPOSED LABEL MARKETING CLAIMS:

For the protection of perimeter cavities and construction voids in residential, institutional, public, commercial, industrial, etc structures from concealed termite entry.

STUDY REVIEW

Purpose: It is the objective of this efficacy report to provide supportive data for the registration of the complete subterranean termite control program for the protection of new structures from termite damage in the continental United States, on the island of Guam, and other territories.

MATERIALS AND METHODS

Test Location:
Trial 1: University of Queensland, Brisbane, Queensland
Trial 2: Commonwealth Scientific and Industrial Research Organization (CSIRO) in Canberra, ACT.

Test Material(s): plastic granule 3 mm in diameter and 2-3 mm in length made from low-density polyethylene and impregnated with 0.10% bifenthrin (w/w); this is the same EPA test product under review.

The author noted that the complete HomeGuard® termite control system consists of 3 elements impregnated with 0.10% bifenthrin: a plastic sheet, a plastic collar for service penetrations in the slab, and plastic granules to treat void spaces associated with the slab.

Test Species Name, Life Stage, Sex and Age: Termites (*Coptotermes acinaciformis*)
Trial 2: 250 workers and 2 soldiers

Describe test containers, chambers and/or apparatus (include site description and location) and how experiment was conducted:
Trial 1: The test chambers consisted of clear assay tubes 25 mm in diameter and 150 mm long, arranged vertically, set up from top down as follows: the top 20 mm were empty space where 1.5 g of termites were introduced, next 15 mm of agar, then 100 mm of granules, then 15 mm of pine shavings, with both ends of the tubes sealed with parafilm. The tubes were inspected at 48 hours and penetration depths measured.

Trial 2: Test chambers of clear assay tubes 25 mm in diameter and 100 mm long, arranged vertically, set up from top down in order as follows: a plastic cap was attached at the top of the tube, 25 mm diameter filter paper disc, a poplar wood disc 3 x 25 mm, a 20 x 25 mm plug of agar, a 75 mm layer of the test granule, a 25 mm disc of filter paper, 20 mm of sandy loam soil, another agar plug 30 x 25 mm, final filter paper disc on top. A 45 mm space remained to hold termites. Once the termites were added the tube was laid horizontal.

List the treatments including untreated control (express application rate as g/m^2):

Trial 1:
1. HomeGuard GT impregnated with 0.05% bifenthrin
2. HomeGuard GT impregnated with 0.10% bifenthrin
3. Untreated granule

Trial 2:
1. Untreated, 3 mm diameter granules
2. 0.05% bifenthrin, 3 mm diameter granules
3. 0.10% bifenthrin, 3 mm diameter granules (this is formulation for registration in the U.S.)
4. 0.10% bifenthrin, 1 mm diameter granules
5. 0.2% bifenthrin, 3 mm diameter granules
6. 0.4% bifenthrin, 3 mm diameter granules

Number of replicates per treatment:
Trial 1: 5
Trial 2: 5

Number of individuals per replicate:
Trial 1: not stated, given in terms of 1.5 g of termites/replicate
Trial 2: 250 workers and 2 soldiers

Length of exposure to treatment:
Trial 1: 48 hours
Trial 2: 14 days

Were tested specimens transferred to clean containers? No

Experimental conditions (state relative humidity, temperature, and photoperiod): Data not provided.

Data or endpoints collected/recorded:
Trial 1: penetration depth at 48 hours
Trial 2: mortality and tunnel length

Data analysis:
Trial 1: An ANOVA analysis of tunneling distance was conducted; significance was tested at the 1% level. Comparison for significance was made between each treatment.

Trial 2: An ANOVA analysis of tunneling distance between bifenthrin treatments nested for colony with Bonferroni post-hoc comparisons.

RESULTS

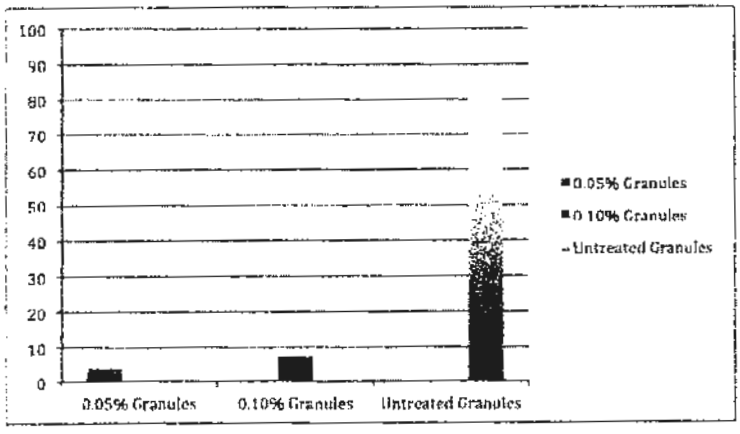
Raw data were not included. No protocol amendments and deviations were noted. Data were not appropriate for correction using Abbott's Formula.

Trial 1: There was no significant difference in the penetration depths between the two treatment groups (0.05% or 0.10% granules), which were 4.2 and 7.2 mm, respectively, compared to a penetration depth in the untreated granule group of 88.2 mm (Table 2; copied from p. 36 of 37 of MRID 48751603).

Table 2: Tunneling distance (mm) of Coptotermes acinaciformis after 48 hours exposure.

Replicate	UTC	HG GT 0.05%	HG GT 0.1%
1	73	8	14
2	100	2	5
3	68	8	8
4	100	3	3
5	100	2	8
Average	88.2	4.2	7.2

Tunneling Depth into the HomeGuard GT Barrier by *C. acinaciformis* after 48 Hours



Trial 2: As demonstrated in Figure 11 below (Figure 11; copied from p. 23 of 37 of MRID 48751603), tunneling by controls averaged 24.9 mm. The groups with the next greatest tunneling

distance were treatments 2 (0.05% bifenthrin, 3 mm) with an average of 9.1 mm and treatment 3 (0.10% bifenthrin, 3 mm) with an average of 8 mm. The remaining treatment groups 4 (0.1% bifenthrin, 1 mm), 5 (0.2% bifenthrin, 3 mm), and 6 (0.4% bifenthrin, 3 mm) had tunneling distances averaging 4.6, 4.9 and 5.5 mm. Statistical analysis revealed a significance difference in the distance tunneled by groups 2 and 3 compared to groups 4, 5, and 6.

The authors noted that termites reached the maximum distance tunneled by day 2, most likely due to the repellent effect of bifenthrin and the difficulty the termites had in moving the granules. The difficulty in moving the granules was also apparent in the control treatment control (T1) in which the 75 mm barrier was penetrated in only 2 of the 15 replicate tubes.

The low tunneling rates due to the repellency of bifenthrin resulted in minimal mortality because of reduced exposure.

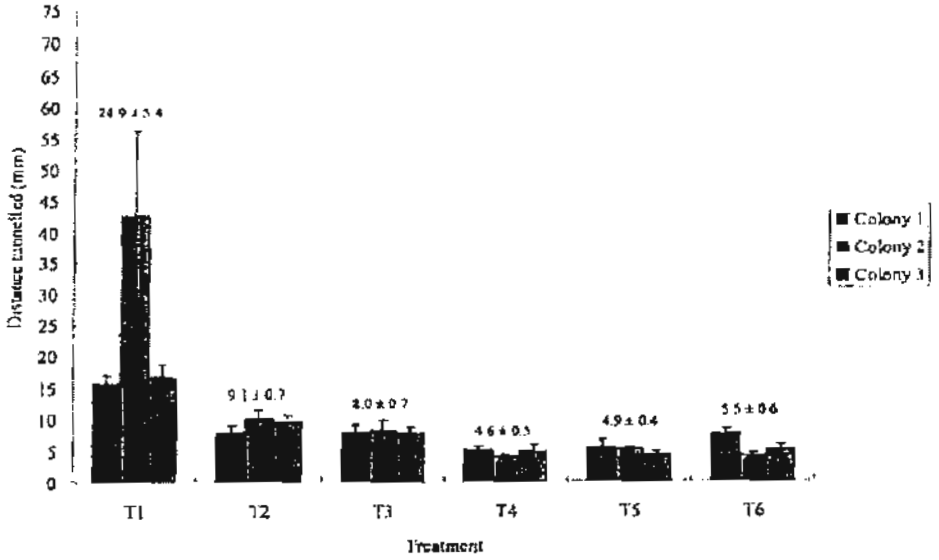
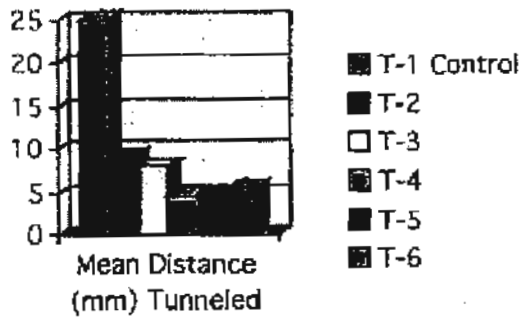


Figure 11. Average distance tunnelled (± standard error) by colonies of *Coptotermes acinaciformis* at day 14. Values above bars are the combined averages of distance tunnelled (± standard error).



Study Author's Conclusions

C. acinaciformis was unable to penetrate through a 75 mm thick barrier of HomeGuard GT Granular termiticide. The penetration into the barrier for the bifenthrin granule proposed for registration in the United States was 7.2 mm in the first experiment and 8.0 mm in the second. A proposed barrier thickness of 40 mm (approximately 1.6 inches) should have no problem providing the protection needed and prevent termites from entering a structure unobserved.

Reviewer's Conclusions

1. There was no control mortality and/or control was minimal in treated groups.

2. Mortality was not corrected by using Abbott's Formula because there was only limited mortality in treated groups.

3. The results of Trial 1 demonstrated that both 0.05% and 0.1% bifenthrin granules were effective at preventing the tunneling of *Coptotermes acinaciformis* when compared to untreated control granules.

The results of Trial 2 demonstrated that bifenthrin at the tested concentrations and granule sizes was effective at repelling termites: tunneling distance was significantly reduced compared to controls. Because of the strong repellency of the test product, termite mortality was limited (because of reduced contact with the chemical).

Reviewer's Recommendations

1. The study is acceptable.

2. There are no major study deficiencies.

3. The study supports the addition of termites to the product label.

4. The data supports the label claim: "For the protection of perimeter cavities and construction voids in residential, institutional, public, commercial, industrial, etc structures from concealed termite entry."